STEWARTAUDIO

The Difference is Hear

DA-770-2

Owner's Manual

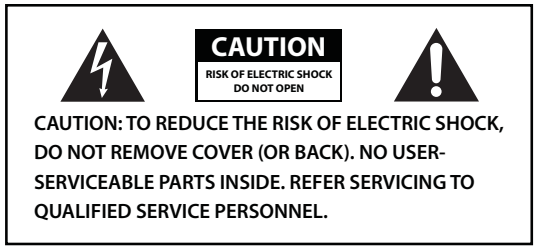
February 2010

www.stewartaudio.com

Important Safety Instructions

Before using your Stewart Audio Inc. Power Amplifier, please read this **Owner's Manual** carefully to ensure optimum trouble-free performance.

WARNING: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT EXPOSE THIS AMPLIFIER TO RAIN OR MOISTURE. DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDE THE ENCLOSURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lighting bolt within arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock to person.

The exclamation point within an equilateral triangle, is intended to alert the user to the presence of important operating and maintenance (servicing) instruction in the literature accompanying the appliance.

Important Safety Instruction – Please Read Prior to Product Installation.

1. Installation should be performed by a trained and licensed professional to insure safe and lasting operation.

2. All of the safety and operating instructions should be read before the amplifier is installed or operated. Retain these instructions for future reference. All instructions should be followed; all warnings on the amplifier and in the operating instructions should be adhered to.

3. The amplifier should be situated such that its location and position does not interfere with its proper ventilation. For example, the amplifier must not be placed on a rug, bed, sofa or similar surface that impedes airflow across the chassis. Airflow through the ventilation openings should be unobstructed.

4. This amplifier should not be used near water, for example, near a bathtub, in a wet basement, near a swimming pool, etc. This amplifier is intended to be operated in a controlled indoor environment.

5. Do not place the amplifier near heat sources such as radiators, heat registers, stoves, or other appliances that produce heat.

6. The amplifier should only be connected to 120 VAC, 60 Hz power supply. Do not defeat the ground or polarization of the power plug.

7. Route power cord and other cables so that they are not likely to be walked on, tripped over or stressed. Pay particular attention to condition of cords and cables at plugs and at the point where they exit the amplifier. To prevent risk of fire or injury, damaged cords and cables should be replaced immediately.

8. Clean the amplifier with a clean, damp cloth. Do not use solvents or abrasive cleaners. Never pour any liquid on the amplifier.

9. When left unused for a long period of time, the power cord should be unplugged form the outlet.

10. Damaged Amplifiers requiring service should be repaired by a qualified service technician when:

    a. The power cord or AC plug has been damaged.
    b. Objects have fallen, or liquid has spilled into the unit.
    c. The amplifier has been exposed to rain or other moisture.
    d. The amplifier does not appear to operate normally or exhibits a marked change in performance.
    e. The amplifier has been dropped or the enclosure damaged.

11. The user should not attempt to service the amplifier beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

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This amplifier proudly designed and manufactured in the USA.

1 Welcome

STEWART AUDIO
The Difference is Hear

Congratulations on the purchase of your new, state of the art Stewart Audio DA Power Amplifier. Stewart Audio's commitment to innovation in design and quality workmanship has provided its customers with a unique combination of performance and reliability. This commitment to excellence has gained the respect of industry professionals around the world. We are confident that your new, state of the art 70.7V Digital Power Amplifier will provide you with many years of reliable service.

If after reading this manual you should have any questions concerning amplifier installation and operation, please contact your Authorized Stewart Dealer, or you may contact us directly using the contact information provided on the back of this manual.

1.1 Features

The DA-770-2 Series Professional Power Amplifier utilizes a new high speed switching power supply and Class "T" output topology. The amplifier will deliver over 80 Watts at 70.7V of power per channel and is offered in a 2 channel configuration. This remarkable performance comes in a very compact package weighing a mere 3.4 pounds and occupying just one-half standard rack space. The DA-770-2 Series Amplifiers are convection cooled and require no noisy fans for cooling.

1.2 Using this Manual

In order to obtain maximum performance from your DA-770-2 Series Amplifier, please take time to read this brief owner's manual and carefully follow the guidelines for connection and operation.

This manual provides you with the information necessary to safely install and operate your new DA-770-2 Series amplifier in the most common scenarios. If you find yourself requiring additional assistance, please feel free to contact your Authorized Dealer, or you may contact us directly using the contact information provided on the back of this manual.

2 Setup

2.1 Setup Precautions

CAUTION: Before installing your amplifier, make sure that you have read the Important Safety Precautions at the beginning of this manual.

2.2 Rackmount Installation

The DA-770-2 amplifier takes up only 1/2 of a standard 19" rack unit.

While it is not necessary to rackmount your DA-770-2 amplifier, there are two options available if you would like to do so : a single rackmount or a double-rackmount.

NOTE: Regardless of which rackmount option is used, the 4 adhesive rubber feet must be removed from the bottom of the unit.

2.2.1 Single Rackmount

A single DA-770-2 amplifier can be mounted on one rack unit with the RMK-70-S rackmount kit. The kit includes 2 brackets which will center the DA-770-2 on a single rack unit.

2.2.2 Dual Rackmount

Two DA-770-2 amplifiers can be mounted on one rack unit with the RMK-70-D rackmount kit. The kit will connect the two amplifiers and center them on a single rack unit.

Single Rackmount with RMK-70-S

Dual Rackmount with RMK-70-D

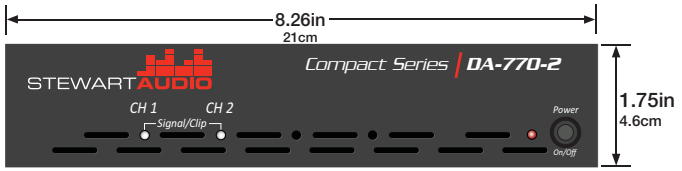
2.3 Proper Cooling Considerations

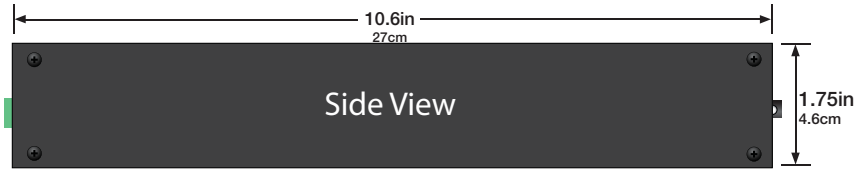
Cooling of the DA-770-2 Series amplifiers is achieved by Stewart's unique whole chassis heatsink design, which utilizes the entire chassis as a heatsink to cool the heat generating components inside. In the event the internal ambient temperature reaches 85 degrees centigrade, the protection circuit will shut down the power supply until the amplifier cools down.

Although the sophisticated thermal management system in the DA-70 Series makes it less susceptible to overheating than other amplifiers, it remains good practice to provide airspace around the chassis.

CAUTION: Inadequate airflow to the amplifier can cause the amplifier to overheat and potentially become damaged in the process. Be sure to provide plenty of air space to allow for convection cooling.

2.4 Product Dimensions



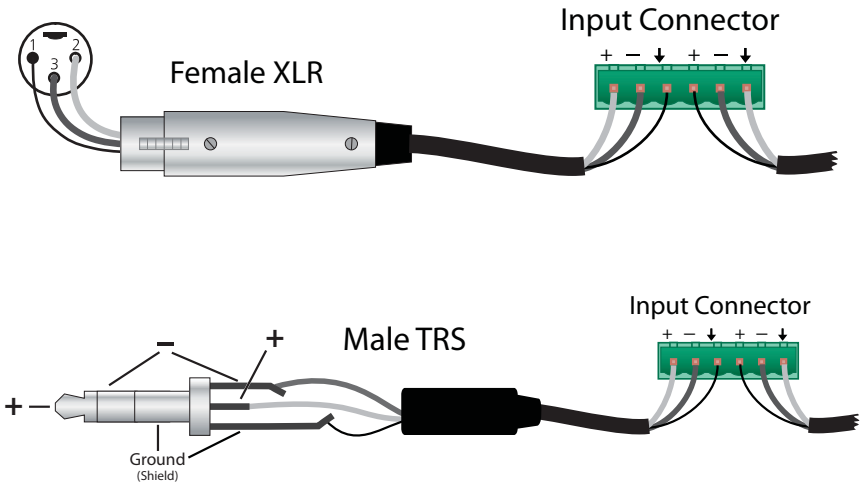


2.5 Input Connections

Your DA-770-2 Series amplifier is provided with a 3-pin Phoenix connector for each input. This connector will accept both balanced or unbalanced connections, however some modifications must be made for an unbalanced connection. See the next two sections for instructions on connecting your amplifier to its input source.

2.5.1 Balanced Connections

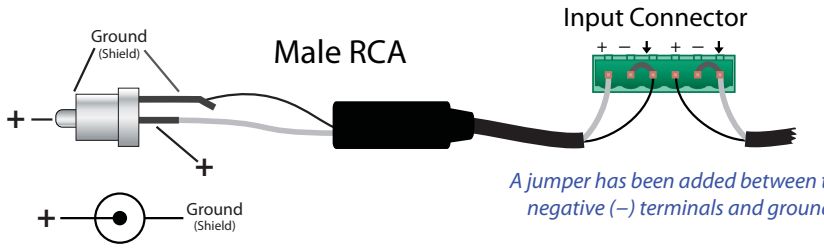
When using a balanced input source and connector, you must ensure that the hot, cold, and ground pins of the connector are matched up to the +, -, and ground pins of the DA-770-2's Phoenix connector respectively. Diagrams have been provided for standard XLR and TRS connectors. Please refer to the manual of your input source in case it does not follow the standard pin-out.



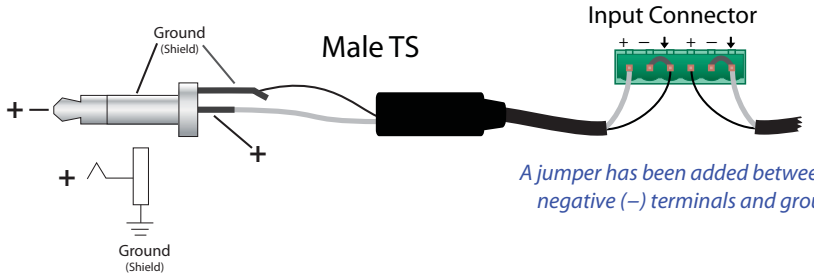
(Connector enlarged to show detail)

2.5.2 Unbalanced Connections

When using an unbalanced input source and connector, a jumper must be added between the negative (-) terminals and the ground terminals. Once this has been done, the unbalanced source can be connected to the positive (+) and ground terminals. Diagrams have been provided for standard RCA and TS connectors. Please refer to the manual of your input source in case it does not follow the standard pin-out.



A jumper has been added between the negative (–) terminals and ground



A jumper has been added between the negative (–) terminals and ground

2.6 Output Connections

Because of the differences in the way that constant-voltage amplifiers work as opposed to a typical 8-ohm setup, the wiring procedure as well as the gauge of wire used is very different.

The low current running through the wires to the speakers (because of the high, constant voltage) allow you to use much thinner wire gauges than in an 8-ohm setup. Please refer to the following chart to choose the appropriate wire gauge for your installation.

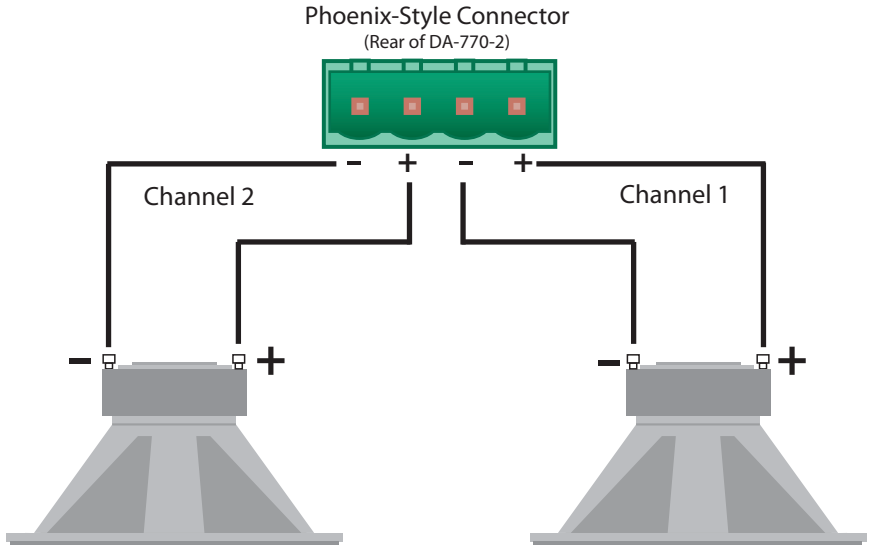
Distance	Wire Gauge
Up to 500ft	22 AWG
500-1000 ft.	20 AWG
Over 1000ft	18 AWG

Speaker leads connect by means of "Phoenix" type block connectors supplied with the unit. Strip speaker leads 1/4" and insert into connector observing proper polarity. With a small, flat-blade screwdriver, tighten the screw until the leads are held securely in place. Inspect for possible shorts or broken wires.

2.6.1 Wiring Procedure

Once the wire leaders have been prepared as described above, connect the speakers as shown in the diagram while the unit is powered off.

A single DA-770-2 is capable of supplying 80W of power per channel. As a buffer, a typical installation will only utilize 75% of the total 80W once all of the speakers have been connected. If each speaker is using a 5W power transformer, up to 12 speakers can be connected per channel (80W * 75% = 60W.



CAUTION: Stewart Audio will not be held responsible for damage to speakers that happen as a result of being unable to handle constant 70.7 volts. All loudspeakers MUST be fitted with a 70-volt transformer in order to prevent serious damage to the equipment.

3 Operation

3.1 Operating Precautions

1. Before use, your amplifier must be configure for proper operation, including input and output wiring hookup. Improper wiring can result in damage to equipment or potentially harm to the operator. Consult section 2 for setup instructions.
2. Tampering with the circuitry, or making unauthorized changes is not only dangerous but may also violate local regulations.
3. Use care when making connections between the amplifier and the input or output equipment. Using equipment that is not capable of handling the output wattage may lead to permanent damage.

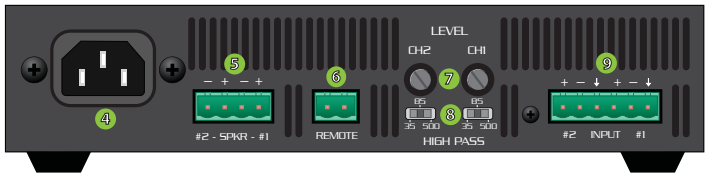
NOTE: Stewart Audio will not be held responsible for damage to your DA-770-2 or connected equipment if the instructions in this manual are not followed.

3.2 Controls, Indicators, and Connectors

Front View

1. Signal/clip indicator lights
2. Power on/off switch
3. Power indicator light

Rear View



4. Power cable socket (IEC C13)
5. Speaker inputs
6. Remote on/off connector
7. Input sensitivity knobs
8. High-pass filter selectors
9. Speaker inputs

3.2.1 Indicators

The DA-770-2 has 3 front panel LED indicators. The first is the power indicator which will illuminate when power is supplied to the amplifier. This indicator may take up to 30 seconds to light up when the amplifier is first turned on.

The other 2 LED indicators are the "Signal" indicators, one for each channel. These LEDs will glow green if the signal is between –20dB and 0dB. When the signal exceeds 0dB, the LED will glow red to indicate that the amplifier is being driven into clipping. **See section 4 for ways to prevent this.**

3.2.2 Controls

The DA-770-2's front panel has only one control, a push button to control the power of the unit. When the push button is depressed, the power is on. When the button is push button is out, the power is off.

The rear panel contains two input sensitivity knobs as well as two high-pass filter switches (one knob and switch for each of the two channels.)

To adjust the input sensitivity knob, you will need a small flat-head screwdriver. While a typical program source level is present, spin the rotary knob as far clockwise as you can without hearing distortion or without the "Signal" indicator glowing red. If the signal is distorting and the knob is all the way counter-clockwise, adjust the gain down at the source level.

The high-pass filter switch allows you to select the lower cutoff frequency for each channel. The high-pass filters on the DA-770-2 have 3 cutoff points which can be selected: 35Hz, 85Hz, 500Hz. For more details, see **section 3.3.1**

3.3 Special Features

3.3.1 High-Pass Filter

Your DA-770-2 amplifier has 2 high-pass filters, one for each channel. The high-pass filter is used to attenuate (reduce the volume of) frequencies below a desired cutoff point. The high-pass filters on the DA-770-2 have 3 cutoff points which can be selected: 35Hz, 85Hz, 500Hz. To make a selection, slide the switch to the desired cutoff point.

The purpose of this high-pass filter is to both prevent unwanted noise that can come in with the signal sources as well as to prevent damage to speakers which are unable to handle frequencies which are more suited for a subwoofer.

3.3.2 Remote On/Off

The DA-770-2 includes a Remote On/Off function which allows the amplifier to be remotely activated by applying a current to the Remote On/Off connector on the rear of the amplifier.

To use this feature, the amplifier's power switch must be in the "Off" position. Then, once between 5VDC and 24VDC is applied to the rear connector, observing polarity, the amplifier will automatically turn on and stay on until the current is removed.

WARNING: Do not apply more than 24VDC to the Remote On/Off connector. Also, ensure that polarity is observed when connecting the remote power source.

4 Troubleshooting

Problem: Power indicator does not turn on.

Procedure: If this is the amplifiers first power-up, allow for up to 30 seconds for the indicator to turn on. If you are still experiencing a problem, check that the amplifier is plugged into a live outlet and that the power switch is in the down position After you have ensured that it is not a power issue, disconnect any speakers. If the amplifier turns on after a few seconds delay, then the problem is in the output connection. Check wiring and speakers for short circuits.

Problem: Power indicator cycles on and off

Procedure: This indicates a short-circuit on the output wiring. Disconnect speaker wires and turn amplifier power switch on. If the amplifier stays on, the problem is in the output wiring or speakers. Check all connections and consult the manual for your speakers.

Problem: No output on one or both channels; Power indicator is lit.

Procedure: Check that level controls are not turned down. Check that input and output connections are secure.

Problem: **Amplifier overheats and/or shuts off.**

Procedure: Review **section 2.3** on proper cooling procedures. Check the signal lights on the front of the amplifier to see if the signal is overdriving (the signal light flashes red frequently). Overdriving the amplifier for extended periods of time can cause a thermal shutdown.

Problem: Only mid and high frequencies are being heard through the speakers.

Procedure: Check that the high-pass filter is correctly adjusted for your application. Consult section 3.3.1 for more information.

4 Troubleshooting (cont.)

Problem: Output sound is distorted or cracking.

Procedure: Check all cables for damage or loose connections and reduce the gain on the input signal at the mixer or preamp level. Replace the cables and loudspeakers temporarily to see if this resolves the problem. If problem still exists, contact your Authorized Dealer for service.

If after reading this troubleshooting section you are unable to restore proper function, return it to your Authorized Dealer for service. Refer to **section 6** for instructions.

5 Technical Specifications

Maximum Output @ 70.7v	80W per channel
Frequency Response (+0, -0.3 dB, 1)	32Hz-20kHz
Full Power Bandwidth (32 Hz—20 kHz)	+/- 0.5dB**
Signal to Noise Ratio	>85dB
THD+N	<0.1%
Input Sensitivity	1V (0 dBV)
Standard Voltage Gain	71x (37dB)
Input Impedance (Balanced/Unbalanced)	10 kΩ / 5kΩ
Class	D
Input Connectors	Phoenix Type (3 Pin)
Output Connectors	Phoenix Type (2 Pin)
Remote On/Off Connector	Phoenix Type (2 Pin)
Power Supply	High Speed Switching
Cooling	Convection-Cooling
Front Panel Controls	Power On/Off
Rear Panel Controls	Channel Gain , HP Filter
Hi-Pass Filter	32, 68, or 500Hz
LED Indicators	Power, Signal, and Clip
Construction	Steel & Aluminum
Operating Voltage	120VAC
Dimensions	
Height	1.75in (4.6cm)
Width	8.26in (21cm)
Depth	10.6in (27cm)
Weight	2.9lbs (1.32kg)

*** With hi-pass filter bypassed.*

Stewart Audio reserves the rate to change features and specifications without notice.

6 Warranty Information

6.1 Warranty Summary

All Stewart Audio amplifiers and accessories, unless excluded in this summary, are covered by a 3-year limited warranty on parts and labor from the data of purchase. In order to be eligible for warranty repairs, the amplifiers and accessories must have been purchased through an authorized Stewart Audio dealer and submitted by the original purchaser. This warranty is only valid in the country in which the amplifier was purchased.

6.1.1 Eligibility Requirements.

Stewart Audio warrants against all malfunctions which come as a result of component or manufacturer defect. The amplifier is also covered from all failures which arise during the warranty period (3 years from date of purchase) that are not a result of misuse. The following actions will void your warranty:

- The power cord or AC plug has been damaged through misuse.
- The amplifier has been exposed to moisture or extreme temperatures.
- The amplifier has been dropped, items have been dropped on the amplifier, or the enclosure has been damaged.
- The amplifier has been opened by the operator.
- The amplifier was improperly packaged when sending to the factory for repair, resulting in damage.
- Any of the precautions or instructions found in this manual were not followed.

Damages resulting to the amplifier which are not covered under this warranty can be factory-repaired at cost to the customer. Use the contact information below to initiate the repair process.

6.2 Return Procedure

This section includes the return procedures which must be followed in order to prevent processing delay or cost to the customer. Please read the entire section before contacting Stewart Audio for returns.

6.2.1 Return Authorization Number

All returns to the factory for service must be accompanied by a Return Authorization (RA) number. One can be obtained by contacting Stewart Audio at (209) 588-8111 or via e-mail at support@stewartaudio.com.

NOTE: Any defective products received without an RA number will be returned to sender at their expense.

If Stewart Audio is unable to contact the sender in 14 days, the merchandise will be considered scrap and may be disposed of.

6.2.2 Shipment Instructions

If Stewart Audio requests that you ship the defective product back to their service center, please refer to the guide below. To ensure prompt warranty service, be sure to follow all instructions.

1. Return Authorization (RA) is required for product being sent to the factory for service.
2. See packing instructions in **section 6.2.3.**
3. Ship the defective product using a method which provides for order tracking or order confirmation. The service center is located at the following address:

   Stewart Audio
   14397 Cuesta Court Suite D1
   Sonora, CA 95370

4. Use a bold black marker and write the RA number on three sides of the box.
5. Record the RMA number for future reference. The RA number can be used to check the repair status.

6.2.3 Packaging Instructions

Should Stewart Audio request that you ship your product to their service center, these instructions must be followed in order to ensure safe delivery. If they are not followed, Stewart Audio assumes no responsibility for damaged goods and/or accessories that are sent with your unit.

6.2.3 Packaging Instructions (cont.)

1. Please write the RA number on three sides of the box. Include the Stewart Audio RA number inside the box and a brief description of the problem.
2. Do not ship any accessories (manuals, cords, hardware, etc.) with your unit. These items are not needed to service your product. Stewart Audio will not be held responsible for these items if they are returned with the amplifiers.
3. When shipping your amplifier, it is important that it has adequate protection. We recommend you use the original packing material when returning the product for repair. If you do not have the original box, see number 4.
4. If you provide your own shipping pack, the minimum recommended requirements for materials are as follows:
    a. 275 P.S.I. burst test, Double-Wall carton that allows for 2-inch solid Styrofoam on all six sides of unit or 3 inches of plastic bubble wrap on all six sides of unit.
    b. Securely seal the package with an adequate carton sealing tape.
    c. Do not use light boxes or "peanuts".

NOTE: Damage caused by poor packaging will not be covered under warranty.

6.2.4 Estimate Approval

An estimate for all non-warranty repairs will be provided to the customer once the unit has been shipped to the factory. The customer is responsible to approve this estimate within 7 days. If the repairs are not approved within 14 days, Stewart Audio reserves the right to consider the unit scrap and may discard it.

6.2.6 Payment of Non-Warranty Repairs

Payment for non-warranty repairs must be submitted to Stewart Audio before the product will be returned to the customer.

Stewart Audio Product Line

Sub-Compact Products

AV 25-2	35W x 2 @ 4 Ohms 25W x 2 @ 8 Ohms
CVA 25-1	25W x1 @ 25V/70V
CVA 50-1	50W x1 @ 25V/70V

Half-Rack Products

Compact Series

DA70-2	70W x 2 @ 4 Ohms 35W x 2 @ 8 Ohms
DA70-4	70W x 4 @ 4 Ohms 35W x 4 @ 8 Ohms
DA770-2	80W x 2 Constant Voltage 70.7V rms out

PA Series

PA50B	50W x 2 @ 4 Ohms 25W x 2 @ 8 Ohms 100W x 1 @ 8 Ohms bridged
PA100B	90W x 2 @ 4 Ohms 50W x 2 @ 8 Ohms 180W x 1 @ 8 Ohm bridged

AV Series

AV50	50W @ 4 Ohms 25W @ 8 Ohms 100W @ 8 Ohms bridged

1U/2U Products

World Series

World 600	190W x 2 @ 4 Ohms 110W x 2 @ 8 Ohms
World 1.2	350W x 2 @ 4 Ohms 200W x 2 @ 8 Ohms
World 1.6	550W x 2 @ 4 Ohms 300W x 2 @ 8 Ohms
World 2.1	650W x 2 @ 4 Ohms 400W x 2 @ 8 Ohms

Contractor Series

CVA7400	200W x 2 Constant Voltage 70.7V rms out
CVA7800	400W x 2 Constant Voltage 70.7V rms out
World 600R	Recessed controls
World 1.2R	Recessed controls
Custom Amps	Contact factory

For more information, contact sales@stewartaudio.com